



EMPLOYEE HEALTH PROGRAM

for Personnel with

Laboratory Animal Contact

Welcome to the Texas Tech University Health Sciences Center at El Paso (TTUHSC El Paso) and the Laboratory Animal Resources Center.

The use of laboratory animals in research is a privilege. TTUHSC El Paso is committed to quality laboratory animal care and use. To this end, TTUHSC El Paso has established an Institutional Animal Care and Use Committee (IACUC). This committee oversees the Laboratory Animal Care Program and actively works to promote animal welfare at TTUHSC El Paso. TTUHSC EL PASO is required to have an occupational health and safety program (OHSP) for employees, students, and visitors to be in compliance with Public Health Service (PHS) policy and with federal regulations (e.g. Animal Welfare Act) implemented by the Animal and Plant Health Inspection Service (APHIS), United States Department of Agriculture (USDA).

The laboratory animal facility environment represents several unique safety considerations for anyone accessing the facility. Not only does the presence of live animals pose a potential hazard in the form of animal bites and scratches, but also allergic reactions and disease transmission are additional animal associated hazards that should be considered. What's more, the very nature of facility operation requires that potentially hazardous chemicals, gases, radioactivity and controlled substances be used on a daily basis.

For these reasons, your access to TTUHSC El Paso's laboratory animal facility requires that you become familiar with a few basic safety practices and procedures.

The purpose of this document is to increase your awareness of personal safety and provide you with a few basic procedures to be followed when visiting or working in the Laboratory Animal Facility.

RISKS IN HANDLING ANIMALS AND THEIR TISSUES

The hazards associated with handling animals can be placed in three categories:

- 1) **Allergies** are associated with breathing or contacting allergens such as animal dander or urine. The best policy in most circumstances is to prevent exposure.
- 2) **Zoonotic diseases** are those diseases that can be transmitted from animals to humans. Although zoonotic diseases are not common in modern facilities, their prevention and detection must be an important concern of all personnel who work with laboratory animals. Remember that zoonotic diseases can be transmitted by tissues as well as by live animals.
- 3) **Physical injuries** occur from bites or scratches (rodents, rabbits, dogs, cats, swine, primates and others) or other direct injuries. The key to preventing these types of injuries is proper training of research personnel by the animal care staff or other qualified individuals.

Asthma and Allergy in Animal Handlers

Significance:

Some people develop allergies to the animals they work with or to their own pets. Some estimate that as many as 10-40% of the human population that work with animals will develop allergies. If you're

allergic to a species that you work with in your job, it can be quite debilitating. If you suffer from asthma, working with a species to which you are allergic can be a significant health risk.

Symptoms:

Allergic individuals may display any of a number of symptoms; allergic rhinitis (a condition characterized by runny nose and sneezing similar to hay fever); by allergic conjunctivitis (irritation and tearing of the eyes); by asthma (characterized by wheezing and shortness of breath), or by contact dermatitis (a red, bumpy rash that may appear where your skin touches the animal). If you have a stuffy nose or other respiratory signs, and if it seems to last longer than a common cold (weeks instead of days) then you may very well be suffering from an allergy. If you develop suspicious symptoms whenever you're exposed to a certain species, then you're very likely to have an animal allergy.

Biology:

Workers may be allergic to any animal species. The allergens are proteins that are excreted in the animal's saliva, urine, and from various glands associated with the skin. The proteins tend to be sticky and become associated with the animal's hair and with particles of dander. The allergens are unique to each species of animal, so it is possible to be allergic to mice and not to rats and vice versa. It's also possible to be allergic to multiple species; in fact, a person who is already allergic to one allergen (animal or otherwise) has a greater chance of becoming allergic to a new allergen than a person that has no allergies at all.

The animals most commonly associated with workplace allergies are mice and rats. This may be because these are the most common laboratory animals. Other animals to which allergies are seen include rabbits, cats, guinea pigs, dogs, horses, and even cattle, pigs, etc. An individual could potentially be allergic to almost any animal.

Relative Risk:

Exposure to animals is only one of many risk factors associated with asthma and allergy. Various studies have shown that the incidence of animal allergies among animal handlers may be as low as 10% or as high as 40%. While this means that the majority of animal handlers do not suffer from allergies to the animals under their care, it also means that animal handlers have an incidence of allergy and asthma about three times as high as that seen in workers who do not work with animals. Allergy is clearly an important risk associated with animals.

Prevention and Treatment:

Those who work with animals should be aware of the signs and symptoms of animal allergies. If you work with animals, and if you feel you may suffer from allergy to the animals you work with, you should report to your supervisor for the appropriate attention. If you are a supervisor, you should be aware of the possibility of allergies in your workers, and you should be informed of factors in the workplace that can increase or decrease the exposure of your workers to animal allergens.

Allergies can often be managed by a combination of medical management and workplace strategies. It's important to consult with a physician to determine the cause of your allergies in order to manage it effectively.

The most effective way to control and prevent allergies is to minimize exposure to the allergens. If

you work in an animal facility, or if you work with animals in a laboratory setting, the following practices may help reduce your exposure to animal allergens:

1. When possible, perform animal manipulations in a ventilated hood or a biosafety cabinet.
2. When you're not working in a hood or cabinet, make sure that the animal room or other work area is adequately ventilated and that all the air handling equipment in the room is in good order. Animal rooms should deliver at least 10 air changes per hour.
3. Don't wear your street clothes when working with animals or if you do, be sure to wear appropriate gear over your street clothes. Wear dedicated, protective clothing or don the appropriate personal protective equipment.
4. Launder your protective clothing at work, or have it cleaned by a professional service. Don't take your protective clothing home with you.
5. Wash your hands frequently, even after wearing gloves. Avoid touching your face with your hands while working with animals.
6. Keep cages/pens and your work area clean.
7. Use bedding that is not dusty. Most commercial bedding is not dusty. Wood shavings may be dusty or not depending on their source and quality.
8. Reduce your skin contact with animals by wearing gloves and long-sleeves.
9. If you suffer from allergies to a species you must work with, consider wearing an approved, National Institute for Occupational Safety and Health (NIOSH) certified N95 respirator when in the animal facility. Respirators are, in general, less effective than the other methods shown above and should not be used as a substitute for good workplace hygiene.

ZOONOTIC DISEASES

Humans are sometimes susceptible to infectious diseases carried by animals even when the animals themselves show few signs of illness. Microorganisms in the normal flora of a healthy animal may cause serious illness in persons who have had no previous exposure to the organism and lack protective immunity. Workers should be aware of these possibilities and take precautions to minimize the risk of infection. In the event that you do become ill with a fever or some other sign of infection, it is important to let your physician know that you work with animals.

PERSONAL HYGIENE AND PROTECTION

There are some common sense steps that can be taken to lessen the risk of infection when working with animals. These include not eating; drinking or applying cosmetics or contact lenses around animals or animal care areas; wearing gloves when handling animals or their tissues; taking care not to rub your face with contaminated hands or gloves; and **washing your hands** after each animal

contact. Research personnel can protect themselves by substituting manually operated pipettes for needles and syringes, taking enough time to give injections properly, anesthetizing animals prior to inoculation with infectious agents and using a two-person team to inoculate animals. **Do not recap used needles!** Discard them promptly in a biohazard "sharps" container. For procedures such as necropsies, bedding changes and tissue and fluid sampling; containment devices such as biological safety cabinets, full-face respirators or other personal safety gear should be used as indicated.

THINGS YOU SHOULD KNOW

If you are PREGNANT

Toxoplasma is an infectious agent found primarily in cat feces. It can infect unborn babies in women exposed during pregnancy who do not have immunity to the agent. Asymptomatic (i.e. without clinical signs) Toxoplasma infection is common before child-bearing years, and many women have elevated antibody levels indicative of immunity. To help assess the level of immunity against this agent, serum samples can be tested. Cat feces should be avoided, and gloves should be worn when working in areas potentially contaminated with cat feces. Thorough hand washing after handling any potential source of infection is also necessary.

Working with hazardous agents, x-rays, radioactive materials and toxic chemicals is discouraged during pregnancy. Anesthetic gases pose a particular risk to pregnant women and their babies and it is therefore discouraged on pregnant women.

If you are IMMUNOSUPPRESSED

Situations that may cause immunosuppression include splenectomy, corticosteroid use (such as for asthma), certain immunosuppressive diseases and chemotherapy among others. Please notify the employee health nurse if any of these situations apply to you **before** you start working with animals.

If you work with NONHUMANPRIMATES

Diseases of nonhuman primates are often transmissible to humans and can be serious health hazards. The tuberculosis bacterium may be transmitted from humans to animals and rarely from animals to humans. Regularly scheduled TB testing of primates and personnel (including animal handlers, research personnel and possibly maintenance workers and security personnel) must be done. *Shigella*, *Campylobacter* and *Salmonella* cause bacterial dysentery in primate species and can cause similar problems in humans exposed to primate excrement. Parasites such as *Entamoeba histolytica* can also be transmitted to humans and provide further reason for careful hand washing after exposure to primates.

Although there are several primate viruses that can cause disease in humans, B Virus (*Cercopithecine herpesvirus 1*) causes the most concern to people who handle these animals. B Virus is commonly carried asymptotically by rhesus, cynomolgus and other members of the genus *Macaca*. It may cause fatal encephalitis in humans. Wounds inflicted by these species or wounds caused by objects contaminated with body fluids from these species require immediate medical attention. Conversely, common human viruses such as measles and other childhood diseases may also pose particular risks for several primate species.

There is laboratory evidence that Simian immunodeficiency virus (SIV), a primate virus closely related to HIV, the human AIDS virus, may infect humans. All personnel should exercise caution when working with SIV in primates.

Protective clothing, such as outer garments, gloves, masks and face shields, should be used when handling primates. All personnel who come into contact with nonhuman primates are required to have a negative tuberculosis screening. A Macaque Exposure Kit and an SOP concerning management practices for potentially B virus contaminated wounds is provided in all primate use areas.

If you work with DOGS OR CATS

Dogs and cats used in long-term studies at TTUHSC El Paso are vaccinated against rabies. An exception is sometimes made for those animals used in acute experiments. Even though these animals are under a veterinarian's supervision, some risk of exposure to rabies exists because the observation period may be too short to allow typical signs of the disease to develop.

All animal caretakers are given the opportunity to be vaccinated against rabies. Investigators, students and other staff who come in contact with dogs or cats, particularly animals obtained from pounds, are also strongly encouraged to have the pre-exposure rabies prophylaxis and an annual follow-up.

Parasites, such as visceral larval migrans from dogs, some tapeworms, and sarcoptic mange mites, are a potential risk to those handling infected animals. Those working with cats should be conscious of possible allergic reactions. "Ringworm," a fungal disease of the skin, is also a common infection in cats and is readily transferable to man. Cat scratch disease is a zoonotic infection in cats characterized by regional lymphadenitis that follows a skin papule at the site of a cat scratch. While the prognosis usually is excellent, an examination by an employee medicine physician is recommended. Women of child bearing age are encouraged to have a blood sample drawn prior to beginning work.

If you work with FARM ANIMALS (e.g., cattle, goats, sheep, pigs)

Q fever is a potentially serious disease caused by the rickettsia *Coxiella burnetii*, which is shed abundantly from the placental membranes of sheep from infected flocks. Contact with sheep fetuses and fetal membranes have been the cause of Q fever in laboratory workers. Unless sheep that are known to be free of Q fever are used in research, it should be assumed that they are infected, and all personnel working where exposure is possible should take extra precautions. Gloves, mask, and protective clothing are recommended for individuals working with fetal membranes of pregnant sheep and goats. Infected persons can be effectively treated.

Erysipelas in pigs can be transmitted to humans where it causes a severe focal skin infection. Pigs showing diagnostic lesions should be handled with care. Similar skin lesions may be seen on the hands after contact with sheep and goats infected with contagious ecthyma (Orf) or vesicular stomatitis virus.

If you work with BIRDS, RABBITS OR TURTLES

These species also sometimes pose risks. Birds can be infected by organisms that cause diseases such as psittacosis and avian tuberculosis. When working with birds of undefined health status, care is necessary and workers should be informed of possible risk.

Rabbit fur mites such as *Cheyletiella parasitovorax* can cause transient rashes in humans, and those working with rabbits should be aware that rabbits are a common source of human allergens.

Salmonella is frequently harbored by turtles, other reptiles and amphibians. Transmission can be avoided by using protective clothing and good hygiene.

If you work with RODENTS (e.g., gerbils, guinea pigs, hamsters, mice, rats)

Contact with rodents requires awareness of diseases such as dwarf tapeworm, lymphocytic choriomeningitis (LCM), salmonellosis and ringworm. To protect against these agents, care should be taken to limit direct and aerosol exposure to soiled bedding containing feces (salmonellosis, tapeworms) and urine (LCM and leptospirosis). Gloves and masks not only limit exposure to soiled bedding, but also help prevent transmission of diseases such as ringworm and fur mites. Infectious agents that can be transmitted to humans through rodent bites, such as *Streptobacillus moniliformis*, are now uncommon in modern rodent research colonies.

Allergies are common among personnel who work with rodents. If you are already sensitized to rodent dander, or become sensitized, report this immediately to Occupational Health and Safety.

If you work with HAZARDOUS AGENTS

There are methods available for monitoring hazardous biological, chemical and physical agents. Protective devices should be used when possible and other safety practices consistent with current guidelines should be adopted.

Hands should be washed after handling chemicals, infectious materials or animals, and before leaving the laboratory. Whenever possible, a biological safety cabinet should be used when handling toxic or radioactive materials. All work surfaces should be cleaned and disinfected daily when hazardous agents are used, and biohazardous materials should be decontaminated either by autoclaving or chemical disinfection before they are washed, reused or discarded.

If you work with any hazardous or potentially hazardous agent, and you are pregnant or planning to become pregnant; you should meet with the Occupational Health and Safety personnel.

If you work with anesthetic gases (e.g. isoflurane), be sure to properly scavenge the gasses. Gas scavenging may be done by charcoal canisters (e.g. EnviroPure, F/Air), evacuation scavenging system, fume hood, etc. If charcoal canisters are used, each canister must be weighed prior to the first use and after each use. Once the weight reaches 50 grams above the original (unused) weight, the canister must be discarded.

You and YOUR PHYSICIAN

ALWAYS TELL YOUR PHYSICIAN YOU WORK WITH ANIMALS. Whenever you're ill, even if you're not certain that the illness is work related, always mention to your physician that you work with animals. Many zoonotic diseases have flu-like symptoms, and your physician needs this information to make an accurate diagnosis. If you have a health condition that might make you more susceptible to illness than an average worker, you should make an appointment to discuss your condition with your physician. Any discussion between you and your physician will be kept strictly in confidence. You should have a discussion with your physician if you suffer from a chronic infection of any type, if you are pregnant, if you suffer from allergies, if you are undergoing therapy for cancer or an immune disorder or otherwise have a compromised immune system.

For concerns regarding environmental conditions, occupational Health and Safety or emergency procedures, please contact:

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References:

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Available on the Web at: <http://www.cdc.gov/niosh/animalrt.html>

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